

DISCUSSION BY F. NOVOA M. (I)

to the Paper N° 21, Earthquake Effects on Steel Tower Structures atop Building, by T. Konno and E. Kimura.

Much insight can be gained by comparing these results with the discussion made in (1) of the two-degree-of-freedom system subject to random vibration at the base. This has been formerly made for related applications (2) and has also been applied to earthquake specifications (3).

Most important is the final reduction by the authors of the tower response in the tower-building model of fig.7, to a response of the tower alone multiplied by a magnification factor (fig. 26). The magnification factors which can be obtained from (1), based in the computer studies by Curtis and Boykin (4), would correspond well with those represented in fig. 26, if the legend there "Period ratio (Tower/Building)" could be read "Frequency ratio (Tower/Building)". It seems possible to this writer that this error can have been committed in fig. 26, as in fig. 12 "frequency-ratios" were given.

References

- (1) Crandall and Mark: Random Vibration in Mechanical Systems (a book), Academic Press, 1963.
- (2) J. Penzien: Earthquake Response of Irregularly shaped Buildings, 4 WCEE A3, p. 75.
- (3) F. Novoa M.: Earthquake Analysis and Specification of the HV Electrical Equipment, 5 WCEE, paper N° 69.
- (4) Curtis and Boykin: Response of Two-degree-of-freedom Systems to White Noise Base Excitation, J. Acoust. Soc. Am., 33, 1961, pp.655-663.

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